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ABSTRACT

The guidelines presented here are designed to provide nonbehavioral scientists with specific directions on how to ascertain systematically and objectively the effectiveness of an existing videotape or film and how to validate these during production. After an introductory section on the general position of instructional videotapes and films in a school district budget, the following criteria are set forth: 1) Systematic procedures for determining the effectiveness of instructional videotapes/films in inventory or under consideration for purchase, 2) systematic procedures for making validated instructional videotapes/films, and 3) school board instructional videotape/film purchase policy conclusions that emerge from the foregoing discussions. (JY)

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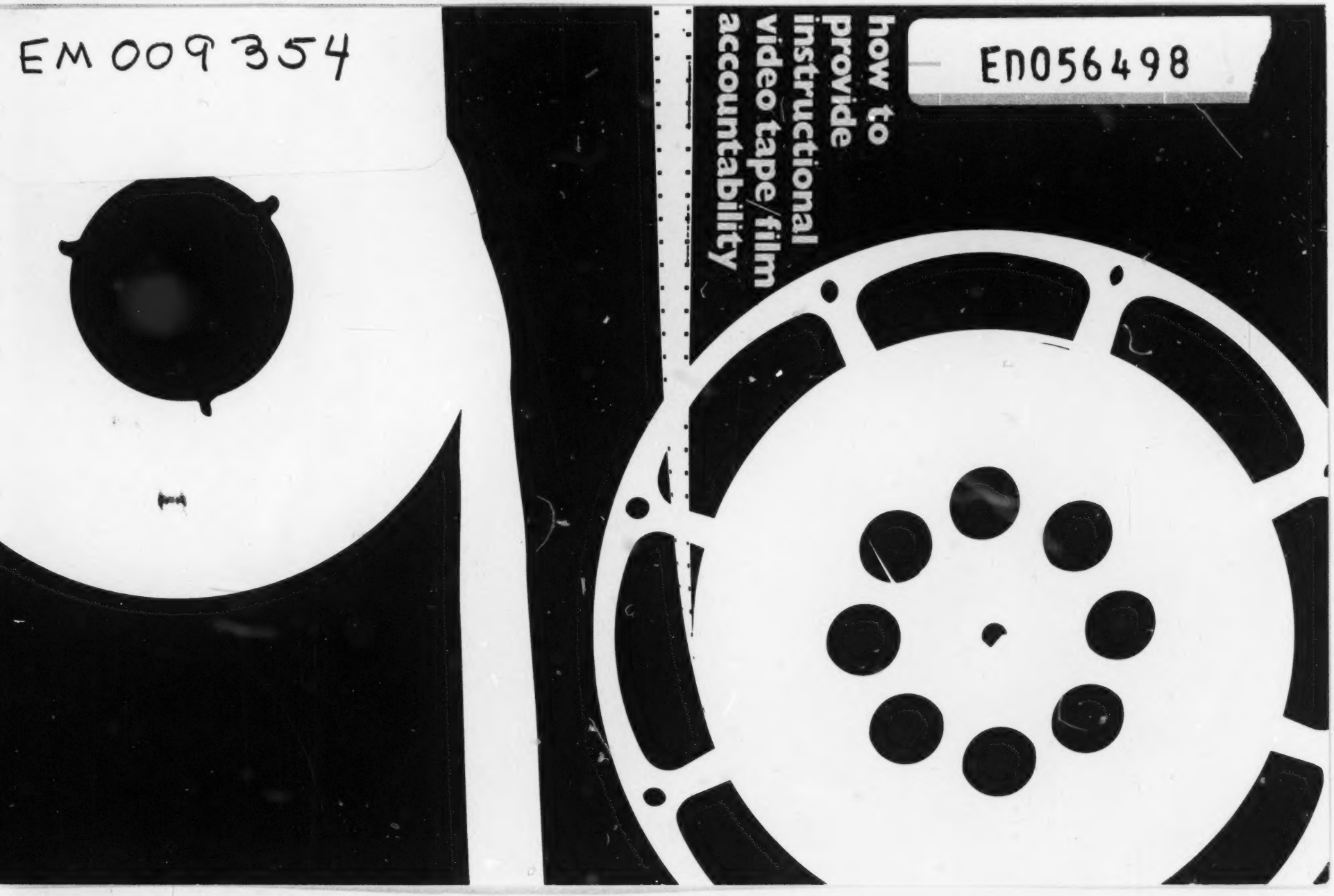

HOW TO PROVIDE INSTRUCTIONAL VIDEO TAPE/FILM ACCOUNTABILITY

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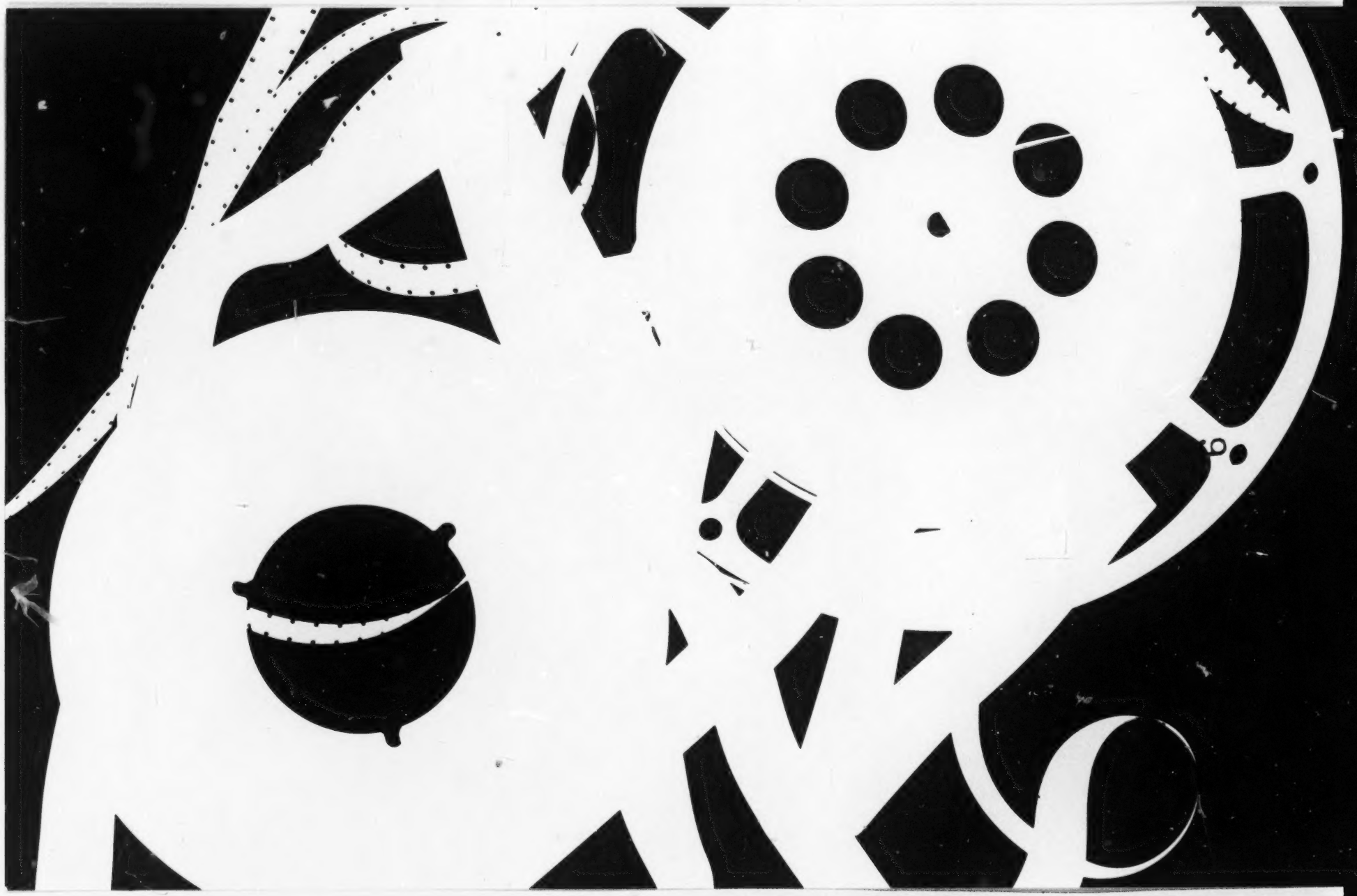
FOREWORD

This publication is designed to provide nonbehavioral scientists with specific directions on how to ascertain systematically and objectively the effectiveness of an existing video tape or film and how to validate these during production.

The specific target audiences are (1) TV/AV department directors who must recommend video tapes or films to boards of education for purchase; (2) TV producers and film makers who supply the market place; (3) members of boards of education who must approve or disapprove video tapes and films for purchase; and (4) students in college level TV/AV courses.

The discussion in this document focuses on the instructional instrument, the video tape or film, and does not enter the matter of distribution method, i.e., through-the-air, wire or video tape recorder/film projector in-classroom playback. There is, however, every intent that TV/AV school personnel, producers and suppliers (including radio and television station personnel who supply instructional program services through-the-air), and boards of education apply the standards set forth on the following pages for documenting the effectiveness of instructional TV/film programs *whether they are distributed through-the-air, over wire or by in-classroom projection.*

Every effort was expended to ensure the technical accuracy of the information and procedures presented. Equal effort was expended to ensure that the explanations are in non-technical, easy-to-follow language. The targeted audiences are composed of busy people. Therefore, unnecessary detail was omitted. This will not please the specialist in behavioral science. It will, we hope, increase the probability of the document being read and used by the targeted audiences.



Chapter I

Introduction and Overview

Instructional video tapes/films are a major item in school system budgets. How effective are they in helping students learn? TV/film producers who sell them don't seem to know. TV/AV department directors who buy them don't seem to know. Both producer and buyer seem satisfied if teachers or other educators opine that a video tape or film is good and it receives heavy bookings into the classroom.

Taxpayers and their elected representatives now ask penetrating questions concerning the cost and effectiveness of the education system and its components. How effective is the instructional video tape/film component in causing students to learn? The only answer available today is "teachers like the video tape or film; they believe it helps students lear[illegible] gets heavy circulation." Teacher opinion and video tape/film use statistics are no longer sufficient to satisfy the elected official who must answer to the taxpayer/voter.[1] He wants systematically collected, objective data on how much student learning occurs from viewing a given video tape/film at what dollar cost. Failure to provide these data will, in all probability, endanger instructional video tape/film budget requests. Providing them will increase the costs of making instructional video tapes/films, and the costs of operating TV/AV departments to a degree.

There is, however, a matter of far greater importance at stake than the survival of instructional video tape/film budgets in school systems. That matter is the obligation to provide students with the best education possible for the amount of money available. The "evaluation" available on instructional video tapes/films today is of no use to those decision makers who would try to provide the best education possible by making cost/effective decisions among alternatives. For example, it should be possible to make a rational cost/effective decision among several alternative films on the same subject. It should be possible to make cost/effective decisions among several alternative video tapes on the same subject. It should be possible to make cost/effective decisions among alternative media such as film, television, radio, textbook.

Throughout this document, the criterion for instructional video tape/film success will be student performance resulting from video tape/film viewing, *not* teacher or expert opinion of a video tape's/film's effectiveness. Student performance, *not* teacher or expert opinion, will be the basis upon which video tapes/films in production will be revised. The systematically collected and presented evidence of student performance after viewing will be the basis upon which decisions to continue using a video tape/film in inventory will be made; it will also be the basis upon which decisions to buy or not buy a new video tape/film will be made. Video tape/film-induced student performance, then, will be proposed as the rational basis upon which the effectiveness half

[1]Two experimental studies found a ***negative*** correlation between expert prediction and objective measures of film effectiveness. See I. R. Merrill and H. H. McAsham, "Predicting Learning Attitude Shift and Skill Improvement from a Traffic Safety Film," ***Audiovisual Communication Review,*** 8:263-74, 1960, and E. Z. Rothkopf, ***Some Observations on Predicted Instructional Effectiveness by Simple Inspection*** (New Jersey: Bell System Laboratories, 1963).

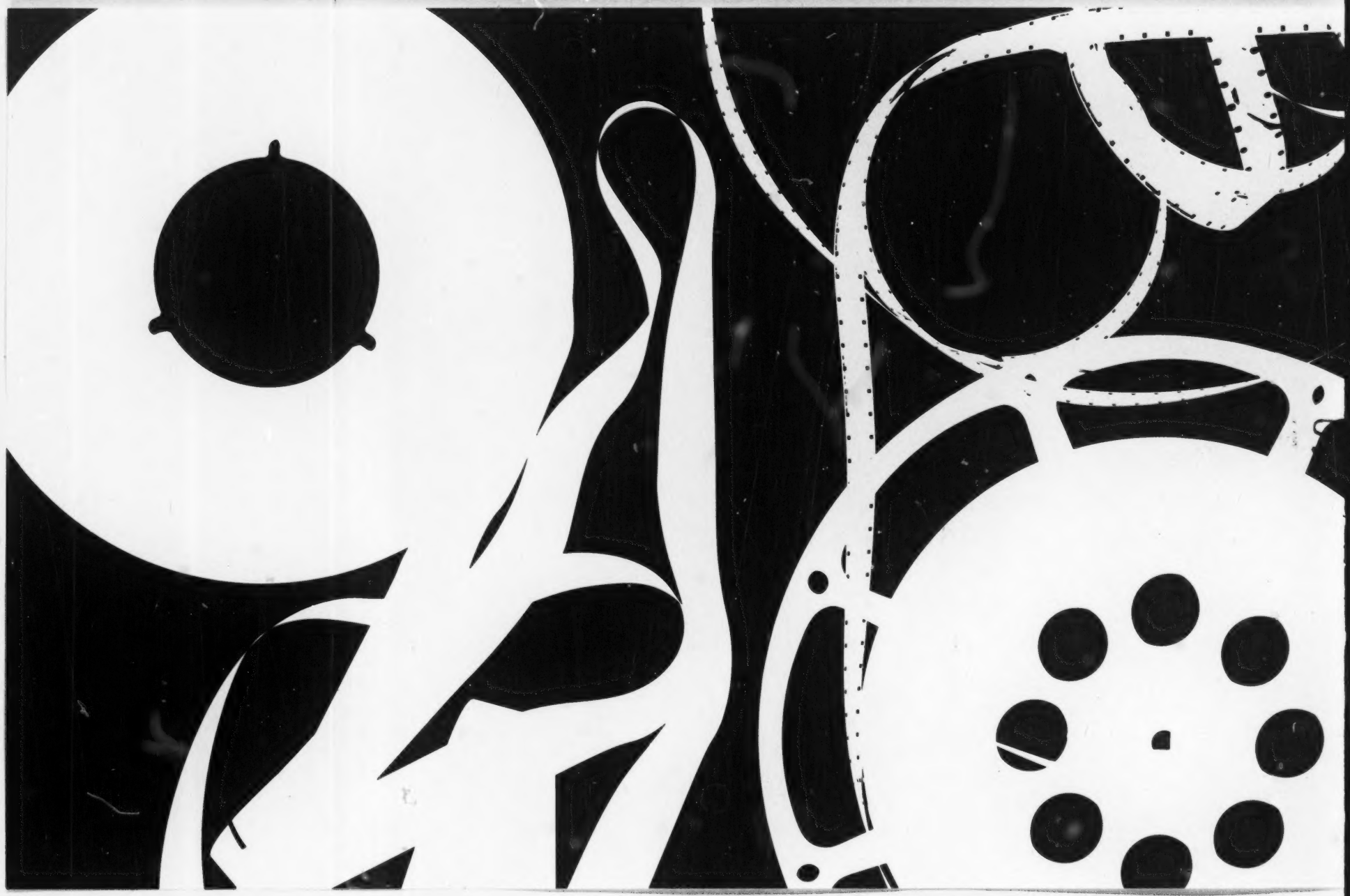
of cost/effectiveness video tape/film buying or retention decisions are made by responsible education officials.

This publication is addressed to four groups: (1) school TV/audio visual department directors; (2) instructional video tape/film makers; (3) boards of education; and (4) students in college level TV/AV courses. It has four major objectives: (1) to provide TV/AV department directors with specific criteria and systematic procedures for determining the effectiveness of instructional video tapes/films in inventory or under consideration for purchase; (2) to provide producers with a set of systematic procedures for making effective instructional video tapes/films so they can supply a product that meets the specifications established here; (3) to provide boards of education with a common set of objective criteria for approving or disapproving requests for the purchase of instructional video tapes/films; and (4) to provide students in college level TV/AV courses the basic tools of systematic instructional video tape/film accountability.

Chapter II sets forth the systematic procedures for determining the effectiveness of instructional video tapes/films in inventory or under consideration for purchase.

Chapter III sets forth the systematic procedures for making validated instructional video tapes/films.

Chapter IV sets forth school board instructional video tape/film purchase policy conclusions that emerge from this discussion.



Chapter II

How to Determine Objectively the Effectiveness of Instructional Video Tapes/Films in Inventory or Under Consideration for Purchase

This chapter will examine the systematic procedures a TV/AV department director may follow to determine objectively how effective a video tape/film in inventory or under consideration for purchase is in helping students learn. Student learning, or performance, is put forward as the critical criterion against which video tape/film effectiveness is assessed.

Current Practice in Video Tape/Film Evaluation

Instructional video tape/film evaluation practice in school systems is subjective. Video tapes/films under consideration for purchase are shown to a selected group of curriculum consultants and classroom teachers. These consultants and teachers are then asked to rate the *potential* effectiveness of a given video tape/film in a particular subject at one or more grade levels. The ratings may be recorded on standardized checklists or by a range of other "evaluation" instruments.

Video tapes/films already in inventory are usually circulated with some kind of form which asks the classroom teacher to "evaluate" their effectiveness.

In the first case above, if the consultants/teachers like it, the video tape/film is purchased; if they don't like it, the video tape/film is not purchased. In the case of a video tape/film in inventory, if most teacher responses are favorable, it is kept on the circulating shelf; if responses are unfavorable (such as "obsolete"), it is removed from the circulation shelf.

Neither of the above procedures produces valid information concerning the effectiveness of a video tape/film in helping students learn. They ask the wrong group of people the wrong questions; i.e., they ask consultants and teachers their opinions of a video tape's/film's worth. Recent research reports that, in fact, there seems to be a *negative* correlation between "expert" prediction and objective measures of film effectiveness.[1] Clearly, different techniques and procedures for evaluating instructional video tape/film effectiveness are required.

A Systematic, Objective Approach to Assessing the Effectiveness of a Video Tape/Film

The preceding brief description of the procedures followed in school systems today to "evaluate" instructional video tapes/films indicates the need for an objective approach. Following, in sequence, are the steps for testing instructional video tape/film effectiveness by use of systematic, objective means. This approach asks the right people (students) the right questions (criterion tests); i.e., it tests student performance on specifically defined performance objectives in a design that makes it possible to establish a causal relationship between video tape/film viewing and student performance.

1. Define the target audience for the video tape/film in terms of grade level, ability range, relevant socio-economic characteristics and previous subject area experience.

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[1] I. R. Merrill, *et al, op. cit.*, and E. Z. Rothkopf, *op. cit.*

2. Specify precisely the instructional objectives for the video tape/film. (Consult the curriculum and lesson plan for the selected subject area and grade level to ensure that the instructional objectives you specify are germane to the course of instruction.) Describe in behavioral terms just what the student will be doing when he is demonstrating that he has achieved the stated objectives. Similarly, before a video tape/film can be evaluated, the objectives must be stated in measurable terms. If the effectiveness of the video tape/film is to be demonstrated, it must be done in terms of measured student behavior, not teacher opinion of the program.

   Well defined objectives include precise information as to what operations the student will be performing when he is demonstrating that he has reached the stated objectives, what relevant conditions will be imposed during the performance and what will be considered to be satisfactory performance.

   For example, students who view video tape/film "X" in the classroom, given no teacher follow-up drill or ancillary materials, will be able to match correctly on a printed quiz nine out of ten Spanish nouns with their English definitions.[2]
3. Prepare the criterion test. (This will help in the next step when the video tape/film is being analyzed to determine if its contents will teach to the test.)
4. View the film; analyze, separately, the content of the sound and picture tracks; and list the discrete facts, opinions and skills that each track presents. If they cover all or most of the information contained in your criterion test, you are ready for the next step. If they do not, either your objectives and criterion test must be modified, or the video tape/film must be discarded as unsatisfactory for meeting your stated performance objectives.[3]
5. If preliminary analysis of video tape/film content leads to the conclusion that it contains the information to answer all or most of the criterion test, the next step is to show it to a sample (10-30) of students similar to those who are the ultimate target audience, and have them complete the criterion test. If student test performance meets or exceeds your minimum criterion score, the video tape/film is probably effective. Minimum criterion is arbitrary. It may be set at 50/50; i.e., 50 percent of the students score 50 percent or better on the criterion test. It can be 60/60, 70/70, 80/80, etc. The strictness of the criterion should reflect the degree to which a video tape/film is independent of other information sources teaching similar concepts in the curriculum. A video tape/film that is expected to be a major information source should have a higher minimum criterion (e.g.,

[2]For specific instruction on how to build instructional objectives, see Robert F. Mager, ***Preparing Instructional Objectives*** (San Francisco: Fearon Press, 1962). The ability to prepare behavioral objectives is central to this whole approach to establishing video tape/film effectiveness.

[3]Nathan Maccoby, Jon Jecker and Henry Breitrose, ***Criteria for the Production and Selection of Film for the Classroom*** (Palo Alto: The Institute for Communication Research, Stanford University, 1969). This study found that content analysis of the sound and picture tracts separated, rather than combined, was helpful in attempts to ferret out the specifics that an existing film might be expected to teach.

80/80) than one that is supplemented or elaborated by other teaching materials (e.g., 50/50).

If the TV/AV department director tests video tape/film effectiveness by following the procedure outlined above, he will have more valid information concerning video tape/film effectiveness in helping students learn than that which current "evaluation" practice provides. However, he will not be absolutely sure that the "test" students would not have done as well on the test without having seen the video tape/film. If the TV/AV department director wishes to do the following in lieu of Step 5, he will ensure that systematic bias does not enter into the results, will effectively rule out prior student knowledge, opinion or skill as alternative explanations for criterion test results, and will thereby increase still further the usefulness of the video tape/film effectiveness data he collects.

(a) Using the total population of target classrooms available, stratify the classes according to the intellectual aptitudes of the student bodies.[4] For example, out of a total of 30 sixth grade classes in a district, district records and the TV/AV department director's own intimate knowledge might indicate that ten of these classes are predominantly composed of children with IQ scores identified as low, ten middle, and ten high. (It could work out in practice to be any mix such as 5 low, 17 middle and 8 high.)

(b) Now, randomly assign, *within* IQ category, classrooms to experimental treatment (they view the video tape/film), and control treatment (withhold the video tape/film). At this point, the TV/AV department director must decide whether he wishes to go economy class or first class in his measurement design. Either will provide reliable measures of instructional video tape/film effectiveness. The economy class design requires less of his time and fewer classes; however, it limits somewhat the generalizability of the findings to the total student population. The first class design requires more time and more classes; however, it increases the generalizability of the findings to a broader segment of the student population.

For example, assume for the moment that the TV/AV department director opts for economy of effort, and hopes to end up with a sample of test classrooms no larger than four. To do this, he would randomly assign, within the middle IQ category classrooms, two classrooms to experimental treatment (view the video tape/film), and two classrooms to control (withhold the video tape/film). In this example, he could put the names of the ten teachers of classes identified as "middle IQ" on small strips of paper in a hat, mix them up, and, without looking, draw the names from the hat one at a time, assigning the first name picked

[4]Stratification by IQ score is probably the simplest to accomplish since the use of IQ tests is widespread in schools and, consequently, the access to scores by the video tape/film evaluator is relatively convenient. However, stratification using other variables should not be overlooked when such alternative stratification is appropriate to the evaluation. For example, if there were a question concerning the relative effectiveness of a video tape/film at the 4th vs. 5th grades, stratification by grade level would be a *sine qua non*. Or, if there were a question concerning the relative effectiveness of a program in teaching the alphabet to preschool blacks, orientals, Mexican-Americans or whites, ethnic stratification would be required. Stratification by IQ score is used exclusively in this discussion only for the sake of simplicity.

to control, the second to experimental, the third to control and the fourth to experimental. (Figure 1 summarizes the test/control assignments for the economy model design.) This design will provide accurate information on how well the instructional video tape/film teaches students with "average IQs." It will not permit generalization about the video tape's/film's effectiveness with "low IQ," and "high IQ" students.

	Middle IQ Classes
Film/Video Tape Viewing Classes	2
Non-Viewing Classes	2
Total Classes	4

Figure 1

Now assume that the TV/AV department director opts for a first class effort, and hopes to end up with a sample of test classrooms no larger than 12 out of the total population of 30. To do this, he would randomly assign, within IQ categories, two classrooms to control (withhold the video tape/film), and two classrooms to experimental treatment (view the video tape/film). In this example, he could put the names of the ten teachers of classes identified as "low IQ" on small strips of paper in a hat, mix them up, and, without looking, draw the names from the hat one at a time, assigning the first name picked to control, the second to experimental, the third to control and the fourth to experimental. This would provide the four classes from the lower IQ category required for the test. Then he would follow the same procedure for the middle and upper IQ classrooms. (Figure 2 summarizes the test/control assignments.) This design will provide information on how well the instructional video tape/film teaches students with low, middle and high IQ's. It increases the "generalizability" of the findings.

(c) Next, show the video tape/film to the experimental groups; withhold it from the control groups.

(d) Give both experimental and control groups the criterion test. The control group scores will establish the level of previewing knowledge, opinion or skills possessed by the students. By comparing the difference between control scores and experimental scores *within IQ categories* (e.g., compare scores of low IQ viewers with the scores of low IQ non-viewers), it then will be possible to find how much student learning took place from viewing the video tape/film as opposed to how much was a part of the student repertoire before viewing.

If the first class measurement design is used, it will be possible to determine whether the video tape/film works better for one group than another by comparing the differences in scores among the three groups.

(e) While comparison of control and experimental raw scores between viewers and non-viewers is useful, a more meaningful assessment of the "significance" of the score difference is possible if the raw scores are compared statistically. Most computer centers have programs to do this quickly, painlessly and inexpensively.

A statistical test called the critical-ratio test would be appro-

	Low IQ Classes	Middle IQ Classes	Upper IQ Classes	Total Classes
Film/Video Tape Viewing Classes	2	2	2	6
Non-Viewing Classes	2	2	2	6
Total Classes	4	4	4	12

Figure 2

priate to determine the significance of mean differences between viewing and non-viewing students *within* a single IQ category. A statistical test called "analysis of variance" (ANOVA) would be appropriate to determine simultaneously the significance of viewer/non-viewer mean differences among the three IQ categories.

The critical ratio test and "analysis of variance" provide objective criteria to determine how often mean score differences as large as those observed between video tape/film viewers and non-viewers would happen by chance alone. A probability of .05 is the usual cut-off point for interpreting a difference between viewers and non-viewers scores as "significant"; i.e., a difference as large as the one observed would have happened only five times out of 100 similar tests by chance alone. A probability of .01 would mean that a difference that large would have happened only one time out of 100 similar tests by chance alone.

What Practical Use Are These Effectiveness Data?

These kinds of data on video tape/film effectiveness have a multiplicity of productive uses. Those of most direct import to the TV/AV department director and school board member are presented here.

1. The data may be consulted to determine how effectively a particular video tape/film under consideration for purchase, or deletion from inventory, is in causing target students to learn specific facts, alter specific opinions or acquire specific skills. Using the design in Figure 3 (economy model) or Figure 4 (first class model) and the analysis of

	Middle IQ Classes
Film/Video Tape A Viewing Classes	2
Film/Video Tape B Viewing Classes	2
Non-Viewing Classes	2
Total Classes	6

Figure 3[5]

[5]The size of the sample of classrooms, 6 in Figure 3, or 18 in Figure 4, was arbitrarily selected for example purpose only.

	Low IQ Classes	Middle IQ Classes	Upper IQ Classes	Total Classes
Film A Viewing Classes	2	2	2	6
Film B Viewing Classes	2	2	2	6
Non-Viewing Classes	2	2	2	6
Total Classes	6	6	6	18

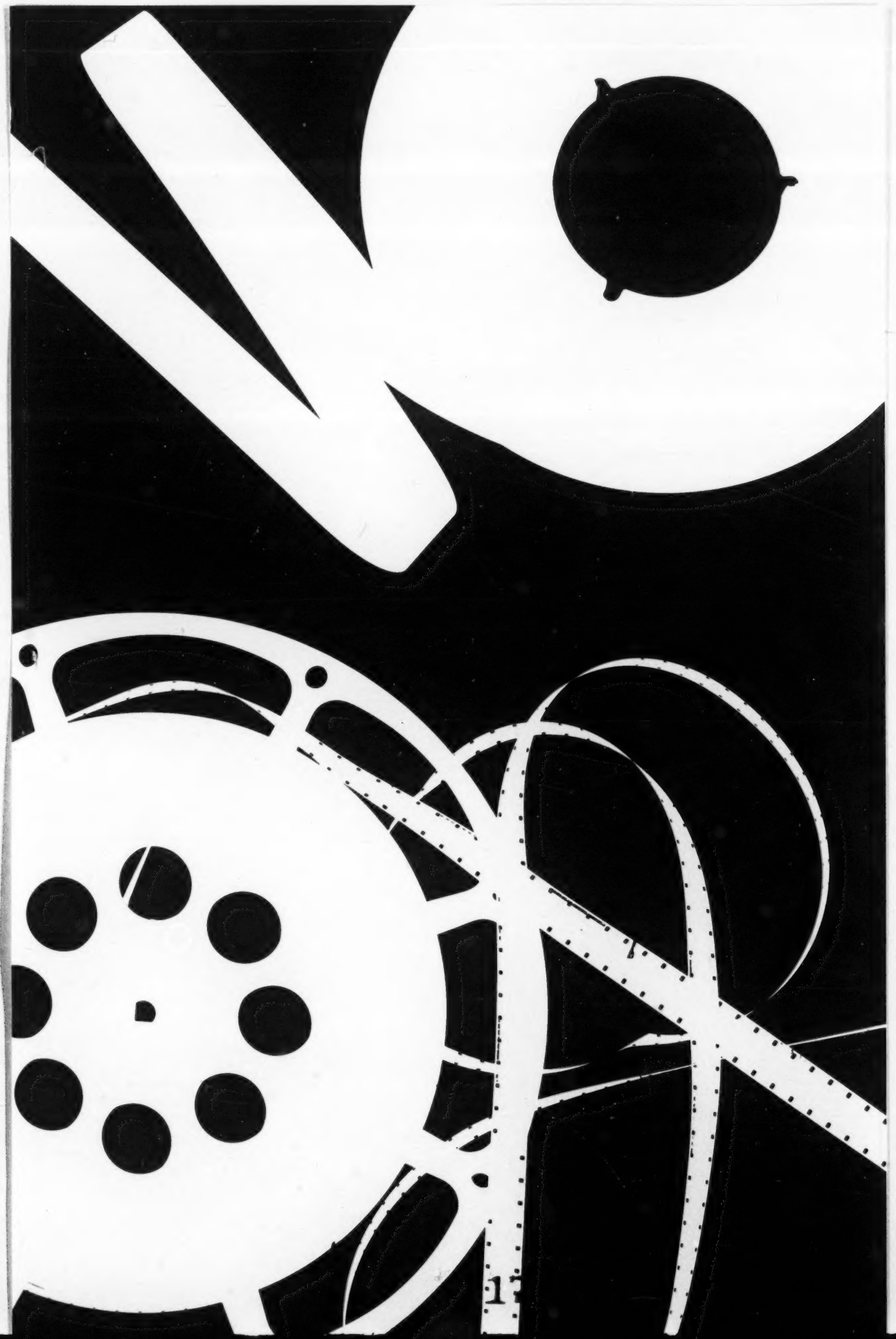
Figure 4[5]

variance statistic, the data from two video tapes/films purporting to teach the same thing may be compared to see which one is the more effective.

2. The data may be systematically assembled into a consumers' guide to video tapes/instructional films, and distributed to (a) assist other school systems in video tape/film buying or obsolescence decisions and (b) save other school systems the time and expense of conducting a systematic video tape/film evaluation you have done already.

The value of these data for school boards who must make cost/effective decisions for the expenditure of available education dollars on instructional video tapes/films is obvious. Perhaps not so obvious is the value of data collected under #1 and #2 above to TV/AV department directors who may wish to justify video tape/film purchase recommendations to school boards.

[5]The size of the sample of classrooms, 6 in Figure 3, or 18 in Figure 4, was arbitrarily selected for example purpose only.



Chapter III

Producing: How to Program and Validate Instructional Video Tapes/Films[1]

Research done in connection with auto-instructional programmed instruction has yielded a number of new design procedures which can improve considerably the effects on student learning of instructional video tapes/films. If they are wise, those who are involved in the production of instructional video tapes/films—producers, directors, writers, teachers—will employ these. If truly committed to the idea that students always should receive the most efficient instruction that science and technology can provide, the school "buyer" of instructional video tapes/films will demand that the production agency do so.

To begin a consideration of these new design procedures we should examine the essential elements of any instructional program.

A program:

1. is a logically sequenced arrangement of stimulus items,
2. has requirements for specific, frequent student responses,
3. has the information broken down into small steps,
4. has an internal pace and construction which are arranged so as to minimize student error,
5. provides the student with immediate knowledge of the results of his response,
6. brings about a gradual shaping of the student's terminal behavior, and
7. often permits the student to set his own pace for learning.

It will be evident to video tape/film makers and TV/AV department directors alike that every item listed above can be provided in the video tape/film program mode.

To design a program having these characteristic elements, the following steps are necessary:

1. Define the program's target audience. For instance, spell out the audience's grade level, ability range, relevant socio-economic characteristics and previous subject area experience.
2. Specify with precision the instructional objectives of the program. Describe in behavioral terms just what the student will be doing when he is demonstrating that he has achieved the program's stated objectives. Well defined objectives include precise information as to what operations the student will be performing when he is demonstrating that he has reached the program's objectives, what relevant conditions will be imposed during the performance, and what the programmer will consider to be satisfactory performance.
3. Prepare the criterion test. It is important that this examination be prepared at this early step. It ensures that the programmer builds the program to teach for specified objectives. It provides at the outset a device for testing the effectiveness of early program drafts.
4. Prepare a list of learner prerequisites, which will provide the programmer with a reference inventory of assumptions concerning students' knowledge of the subject prior to the instruction under plan.

[1]This chapter first appeared in print in 1967, as Warren L. Wade, "Let's Program Instructional TV Programs," ***NAEB Journal***, January-February, 1967, pp. 78-84.

5. Prepare the outline of program content. This is simply a listing of the subject information the student must "experience" in order to progress toward the defined learning goal.

6. Prepare a preliminary content sequence. The programmer's idea of logical content sequence may be good, but it may differ considerably from that which a potential student may find to be logical and useful for learning. At this point in the procedure, the programmer should find a student who is willing to cooperate, show him the program objectives, and have him ask the questions he needs to ask in order to reach those objectives. A typical member of the intended target audience would be appropriate.

7. Select the programming strategy to be followed. There are apt to be many options available. One direction suggests that it might be more advantageous to provide information to the student in small increments, cause him to make frequent responses which are conducive to his development of the desired competencies, and let him know how well he is doing each step of the way. This seems to be the most appropriate strategy for the conventional instructional video tape/film.

8. Write a first draft. Video tape/film production is expensive. Therefore, the programmer might wish to employ some other medium for the preparation, production and presentation of early program drafts. For example, he might implement first drafts on 35 millimeter slides with accompanying sound on audio tape, or he might use simple index cards with picture sketches and typed information, or employ one of the low cost, low quality portable video tape machine-camera combinations. The latter offers the advantages of ease and speed in production-revision.

9. Test the first draft. Corral a small group of ten or 15 students who are typical members, not just the brightest or dullest, of the target audience. Use their responses as a guide for revising the first draft. Here it can get rough. If the students in the small group make errors at various points in the program, it is the fault of the program, not the students. The programmer then will use these student errors to revise the draft. The revision will be successful to the degree that student error on previously missed items is lowered upon administration of the ensuing draft. Programmed video tape/film instruction is constructed to facilitate achievement of objectives, not to confound students.

10. Prepare the second draft. When it is prepared, try it out on another small sample of typical target students and revise if necessary. Repeat this cycle until the program does a job of teaching that is as nearly perfect as the science of auto-instruction and production economics currently permit—e.g., 90 percent of the students who view the video tape/film program score 90 percent or better on criterion performance examinations.[2]

11. When the video tape/film program causes the informally selected test group of students to achieve at a criterion level identified as the minimum acceptable, it is time to subject the video tape/film to more rigorous testing of effectiveness. At this point, the video tape/film should be tested using the procedure beginning on page 10 of this publication, steps 5-a, 5-b, 5-c, 5-d and 5-e.

12. If the results obtained in the rigorous tests are satisfactory, prepare the

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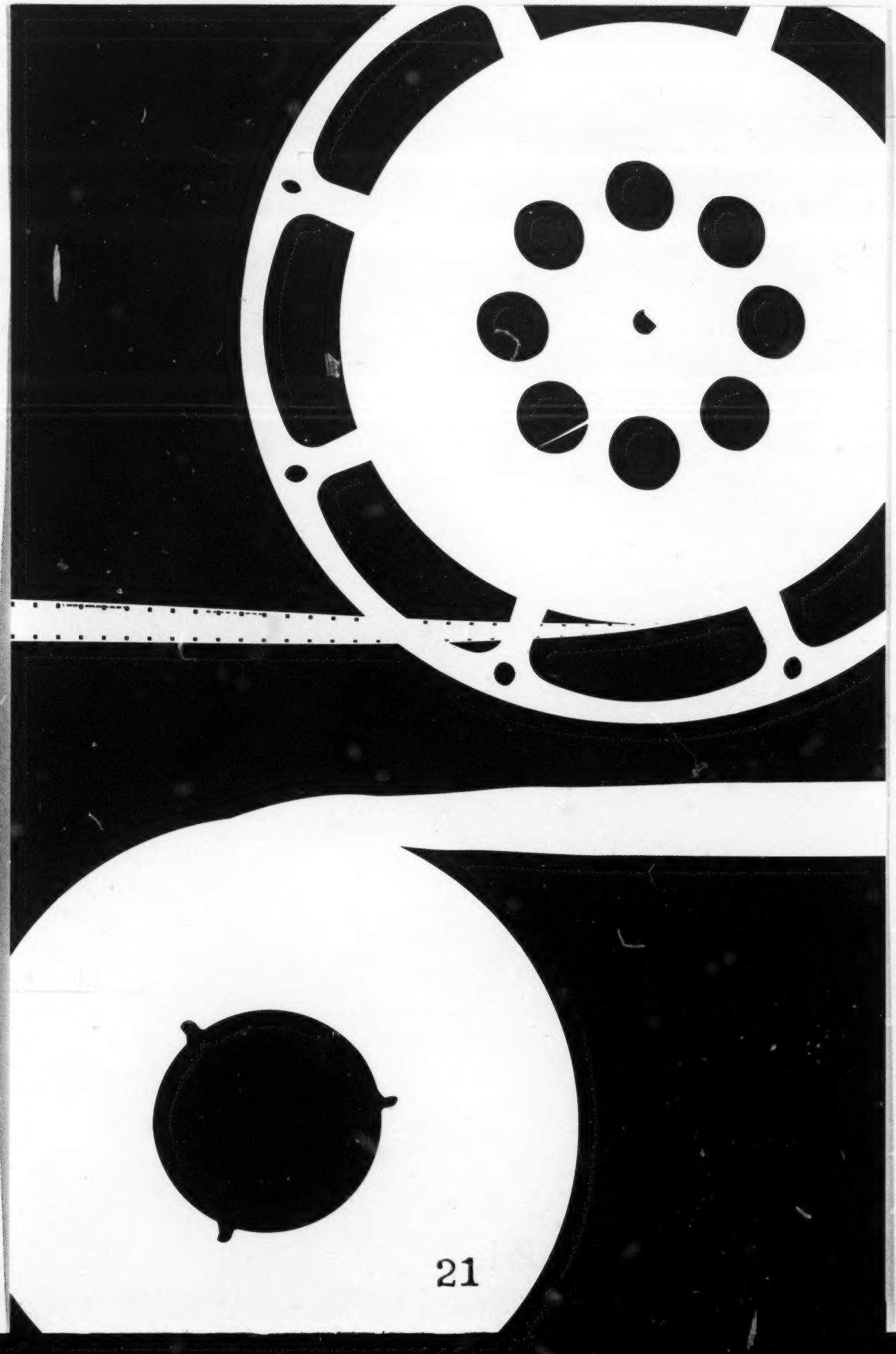
[2]Gabriel Ofeish, The American University, Washington, D.C., has suggested the 90/90 criterion. Subsequent experience by P. K. Komoski indicates that the cost trade-off to increase program effectiveness beyond 70/70 may not always be favorable.

program in final form. Once the video tape/film programmer has reached this point, he will have a program that has been developed and refined on the basis of student response, and has available with it a defensible array of student-viewer performance measures gathered during extensive pretesting and revision of the program.



Chapter IV

Criteria for Approving or Disapproving Requests for the Purchase of Instructional Video Tapes/Films: Guidelines for School Boards

This chapter will examine school board criteria for the approval or disapproval of instructional video tapes/films for purchase, and the evidence acceptable in establishing that a particular video tape/film meets board adopted minimum criteria. The board must arbitrarily decide upon and adopt criteria; the district TV/AV department director must furnish the "internal" evidence that a particular video tape/film meets those criteria; and, the vendor or the TV/AV department director must furnish the "external" video tape/film evidence. These terms and responsibilities are discussed in greater detail below.

Board Criteria

The effectiveness of an instructional video tape/film should be assessed in terms of the achievement of specific objectives by students who view it. Within this context, the establishment of a minimum acceptable performance criterion for students who have viewed a particular video tape/film is an arbitrary board policy decision. A board may decide that the minimum acceptable performance criterion will be 50/50; i.e., 50 percent of the students who view a video tape/film must score 50 or better on a 100 point criterion test. In equally arbitrary fashion, the decision may be 80/80, or 70/70 or 50/75.

The significance of differences between viewer and non-viewer scores on a test designed to assess a video tape's/film's specific effects is another measure to which a minimum criterion can be assigned arbitrarily. For example, a board may decide that the significance of difference between viewer and non-viewer test scores, as determined by use of the "critical ratio," or "analysis of variance" statistical tests, must be .05 or better; some may wish to establish .01 as the minimum.[1]

Either of the above devices is useful in assessing a video tape's/film's effectiveness in helping students learn facts, develop skills or alter attitudes at or above the board's arbitrarily established minimum performance criterion. However, each is only a device to determine objectively whether or not the criterion is met. The necessary prior step is the arbitrary adoption by the board of a criterion.

It is possible that a candidate video tape/film may have influence on student performances in addition to fact acquisition, skill development or attitude change. There are no common tools currently available to assess objectively the effects of a film on performance areas other than facts, skills and attitudes.

The position taken here is that boards of education will find the objective data on instructional video tape/film

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[1] See Chapter II, p. 9, for explanation of the meaning of .01 and .05. The feasibility of performance comparison between viewer and non-viewer performance rests upon the development of reliable test instruments. The utility of the information derived from statistical tests (e.g., critical ratio or analysis of variance) rests heavily on the reliability and validity of the test instrument developed. The development of criterion tests that would fulfill the assumptions underlying the statistical treatments noted here probably requires expert assistance the first time around.

effectiveness in the areas of facts, skills and attitudes to be helpful in making decisions to spend tax dollars to buy or not buy a candidate video tape/film. To reject this evidence because it does not assess the universe of possible effects would leave a board without *any* evidence of any kind of video tape/film effectiveness.

A school board which adopts this method of video tape/film purchase approval must make these arbitrary policy decisions:

1. **Instructional video tapes/films will be accepted or rejected for purchase on the basis of systematically collected objective evidence of measured effects on viewer performance in the areas of fact acquisition, skill development and attitude change.**
2. **Instructional video tapes/films will be accepted for purchase only if viewers score at or above the board's established minimum performance criterion.** (The minimum criterion score may be stated in terms of "x" per cent of viewers who score "x" or better on the terminal criterion test. Or, it may be stated as a statistical significance between the scores of viewers and non-viewers; e.g., .05 or .01.)

Internal Evidence of Video Tape/Film Appropriateness

The "internal" characteristics of a video tape/film are those features that can be determined through visual inspection. Procedures for investigating internal video tape/film adequacy include visual inspection of the video tape/film by an "expert," and his subsequent evaluation of its *content* and *construction.* These procedures have some similarities to the current subjective evaluation practices cited in Chapter II. However, there is one very important difference; that difference is in the emphasis placed on relating the performance objectives of the candidate video tape/film to the performance objectives of a particular curriculum.

Content is inspected for its specific relation to the curriculum and more importantly for the specific relation of the video tape's/film's stated performance objectives to the curriculum's stated performance objectives. (If the video tape/film does not come with stated objectives, the investigator must construct them following the procedures outlined in Chapter II. He may have to do the same for the curriculum.) Emphasis given to topics and organization are also examined during this analysis of content.

Adequacy of construction is assessed in terms of size of the information steps provided, pace, prompting technique, patterns of repetition and review, frequency of required student response and procedures for scheduling of response reinforcement.

If a hierarchy of importance were to be established for steps in internal video tape/film inspection, the most important would be the determination of relation between video tape/film performance objectives and curriculum performance objectives. If this relationship does not exist, the video tape/film should not be recommended to a board of education for purchase.

From a policy point of view, then, the minimum internal video tape/film criterion a school board should adopt for video tapes/films it will consider for purchase will require that the stated performance objectives of the video tapes/films be in consonance with the stated performance objectives of the related curricula.

The performance objectives of the video tape/film, and the performance objectives of the related curriculum area, then, are the minimum internal video

tape/film evidence that a TV/AV department director must present to a board of education when he is recommending a video tape/film for purchase.

External Evidence of Video Tape/Film Effectiveness

It is proposed here that video tape/film vendors furnish a report which details "external" information about the video tape/film with any video tape/film to be considered for purchase by a board of education. If the vendor does not furnish the information, the TV/AV department director may opt to collect it himself according to the instructions in Chapter II. External information about a video tape/film includes features which cannot be observed merely by visually inspecting the video tape/film itself. Required external video tape/film information would include data concerning its purpose and intended use, the source of its content, the qualifications of its authors, the history of its development, tryout and revisions, and the conduct and results of testing to determine empirically its effectiveness or "performance characteristics."

Information needed in the category of video tape/film purpose and intended use includes an explicit statement of video tape/film measurable behavioral objectives. There should also be a detailed description of the target audience specifying age range, ability range and prerequisite knowledge/skill. And, some statement should be provided about intended use conditions and any need for ancillary instruction.

The sources of information contained in the video tape/film should be described in detail. Textbook sources should be noted for currency; consultants should be described according to experience and qualifications in the subject/medium.

Some statement should be included concerning what review, if any, the content was subjected to during the video tape's/film's development.

The empirical tryout and revision routine should be very carefully described, including specific information about test design, how test students were selected, the number of revisions the video tape/film underwent, how revision data were used, the minimum achievement criterion adopted, and the kind and amount of student response data obtained.

Of utmost importance is the inclusion of detail on video tape/film effectiveness data. Evidence of viewer/non-viewer performance on criterion tests must be included along with a copy of the tests. Details about the test method, research design, procedure, conditions and number of students tested must be furnished. Average viewer/non-viewer test scores of performance, and the variability of those measures must be included. Evidence must be presented to indicate the comparability of viewers and non-viewers and the comparability of these test subjects to students in the school district in question. And, finally, there should be included an assessment of the significance of score difference between viewers/non-viewers, as well as a description of the statistical treatment employed in that assessment.

Policy implications for a board of education are these:

No video tape/film should be considered for purchase unless these required "external" film evidences are furnished for inspection. If the required evidence is submitted, only those video tapes/films that report criterion performance scores at or above the board's adopted criterion minimum should be considered for purchase.

The TV/AV department director should make the following assurances to

the board of education when he recommends a video tape/film for purchase:

1. "My staff and I have reviewed this video tape/film for the adequacy of internal characteristics as outlined in Chapter IV of "How to Provide Instructional Video Tape/Film Accountability." The performance objectives of the video tape/film are in consonance with those of "X" curriculum page "X". The video tape/film was found to be acceptable in all or most other internal characteristics."
2. "I have reviewed the video tape/film vendor's published external evidence of effectiveness, found the reported procedures to be adequate in design and execution, and found the reported student performance scores meet or exceed the board's adopted minimum terminal performance criterion with students comparable to the local district population."

OR

"My staff and I have tested this video tape/film according to the requirements and procedures outlined in Chapter II of "How to Provide Instructional Video Tape/Film Accountability." Viewer performance scores meet or exceed the board's established minimum performance criterion."

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